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Samad

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[54] **NEURAL NETWORK AUTO-ASSOCIATIVE MEMORY WITH TWO RULES FOR VARYING THE WEIGHTS**

[75] Inventor: **Tariq Samad**, Minneapolis, Minn.

[73] Assignee: **Honeywell Inc.**, Minneapolis, Minn.

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Related U.S. Application Data

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[52] **U.S. Cl.** **364/513**

[58] **Field of Search** 307/201; 364/513

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,519,998	7/1970	Barron .	
3,579,191	5/1971	Andrease et al. .	
3,593,307	7/1971	Gauge, Jr. et al. .	
3,950,733	4/1976	Cooper et al.	364/900
4,326,259	4/1982	Cooper et al.	364/715.11
4,660,166	4/1987	Hopfield	364/807

OTHER PUBLICATIONS

"An Introduction to Computing with Neural Nets", Apr. 1987, IEEE ASSP Magazine.

"Computing with Neural Networks", May 1987, High Technology.

Primary Examiner—Allen R. MacDonald

Attorney, Agent, or Firm—Michael B. Atlass

[57] **ABSTRACT**

A neural network associative memory which has a single layer of primatives and which utilizes a variant of the generalized delta for calculating the connection weights between the primatives. The delta rule is characterized by its utilization of predetermined values for the primitive and an error index which compares, during iterations, the predetermined primative values with actual primative values until the delta factor becomes a predetermined minimum value.

11 Claims, 7 Drawing Sheets